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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/787,444	03/19/2001	Alfred Busch	CM2107/DO	2144

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CINCINNATI, OH 45224

EXAMINER

KUMAR, PREETI

ART UNIT	PAPER NUMBER
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1751

DATE MAILED: 11/19/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

09/787,444

Applicant(s)

BUSCH ET AL.

Examiner

Preeti Kumar

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 29 August 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1,4,6,8,9 and 11-13 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1,4,6,8,9 and 11-13 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. §§ 119 and 120

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.  
a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

## Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_ 6) ☐ Other:

**DETAILED ACTION**

***Response to Amendment***

1. Claims 5 and 7 are cancelled.
2. Claims 1, 4, 6, 8-9, and 11-13 are pending.
3. The rejection of claim 7 under 35 U.S.C. 103(a) as being unpatentable over Jones et al. (WO 98/00500) in view of Cao et al. (US 6,025,316) is withdrawn in light of applicant's cancellation of claim 7 in paper no.11 dated August 29, 2003.
4. The rejection of claims 1,4,6 and 8-9 rejected under 35 U.S.C. 103(a) as being unpatentable over Fowler et al. (US 6,268,196) is withdrawn in light of applicants amendment to claim 1.
5. The rejection of claims 1, 4,6, 9 and 11-13 rejected under 35 U.S.C. 103(a) as being unpatentable over Jones et al. (WO 98/00500) is withdrawn in light of applicants amendment to claim 1.
6. The rejection of claim 8 rejected under 35 U.S.C. 103(a) as being unpatentable over Jones et al. (WO 98/00500) in view of view of Fowler et al. (US 6,268,196) is withdrawn in light of applicants amendment to claim 1.

***Response to Arguments***

7. Applicant's arguments, see paper no.11, filed August 29, 2003, with respect to the rejection(s) of claim(s) 1, 4,6 and 8-9 under Fowler et al. (US 6,268,196) and 1, 4,6, 9 and 11-13 under Jones et al. (WO 98/00500) have been fully considered and are persuasive. Therefore, the rejections have been withdrawn. However, upon further

consideration, a new ground(s) of rejection is made in view of Cao et al. (US 6,025,316).

***New Grounds of Rejection***

***Claim Rejections - 35 USC § 103***

8. Claims 1, 4, 6 and 8-9 rejected under 35 U.S.C. 103(a) as being unpatentable over Fowler et al. (US 6,268,196) in view of Cao et al. (US 6,025,316).

Fowler et al. teach the utility of cellulases derived from *Trichoderma longibrachiatum* (previously classified as *Trichoderma reesei*) in the treatment of cellulose containing fabrics. See col.8; ln.60-65. Also, bacterial cellulases from *Thermonospora* sp., *Cellulomonas* sp., *Bacillus* sp., are known to possess a binding domain region and a core region. Many cellulase enzymes, including cellulases from, for example, *T. longibrachiatum* and *Humicola insolens* are known to incorporate a catalytic core domain subunit which is attached via a linker region to a cellulose binding domain subunit. See col.11; ln.50-55.

The teachings of Fowler et al. provide motivation for using a CBH I cellulose binding domain derived from *Trichoderma longibrachiatum* that when used in combination with some endoglucanase (EG) type components, in a ratio of 2.5:1 of CBH I to EG components, the CBH I component of *Trichoderma longibrachiatum* imparts enhanced strength loss to the denim fabric. See col.10; ln.50-55. Fowler et al. also teach that protein analysis of the cellobiohydrolases (CBHI and CBHII) and major endoglucanases (EGI and EGII) of *T. longibrachiatum* has shown that a bifunctional organization exists in the form of a catalytic core domain and a smaller cellulose binding

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domain separated by a linker or flexible hydroxyamino acids. See col.3; ln.19-25. The cellulose binding domain and catalytic core of *Cellulomonas fimi* endoglucanase A (C.fimi Cen A) exhibit a similar bifunctional organization of cellulase enzymes. See col.3, ln.34-40.

Regarding the deposition aid material as recited in claim 1, Fowler et al teach hydrolases besides cellulases. See col.24, ln.47-col.25, ln.8. Regarding the polymer recited in claim 1, Fowler et al. teach that the composition may contain from about 0.1 to about 5 weight percent of one or more of the following compounds as antiredeposition agents: polyethylene glycol, polyvinyl alcohol, polyvinylpyrrolidone and carboxymethylcellulose. Among them, a combination of carboxymethyl-cellulose and/or polyethylene glycol with the cellulase composition of the present invention provides for an especially useful dirt removing composition. See col.26, ln.24-30.

Regarding claim 4, Fowler et al. teach that combination of the cellulase with a bleaching agent further improves the detergenting effects. See col.26, ln.33-39.

Regarding claims 6 and 8-9, Fowler et al. teach a linking region between the catalytically active amino acid sequence of a cellulolytic enzyme EGI and the amino acid sequence comprising a cellulose binding domain. See col.11; ln.50-55. Further preferably, the cellulase is present in a concentration of from about 0.1 to 1,000 ppm, more preferable from about 0.5 to about 250 ppm. See col.4, ln.30-35. The truncated cellulase enzyme is employed from about 0.0001 to about 1% weight percent based on the total weight of the pre-soak or pre-treatment composition. See col.28, ln.25-30.

However, Fowler et al. do not specifically teach a laundry detergent composition comprising a benefit agent linked to a deposition aid via the specified linking regions as recited in the instant claim 1.

Cao et al. teach a detergent composition formulated for use in wash water over a wide range of pH in the washing bath. The compositions contain an anionic surfactant, optionally in combination with a nonionic surfactant with optimal builders and enzymes, and also contain at least one water soluble organic polymer, such as polyethylene glycol, which is miscible with or soluble in the surfactant. The presence of the water soluble polymer leads to enhanced fabric cleaning performance. See abstract. In example 1, formulation C and example 2, formulation F, Cao et al. illustrate that the PEG polymer linker not only can bind with conventional molecules such as surfactants and bring them close to the fabric surface, but can "link" also unconventional complex molecules such as enzymes. See col.10-11.

It would have been obvious to one of ordinary skill in the art, at the time the invention was made, to formulate a laundry detergent composition comprising a polymer and a chemical entity comprising a deposition aid having a high affinity for cellulose and a benefit agent wherein the benefit agent is linked to the deposition aid via the specified linking regions as recited in the instant claim 1, because Cao et al. in combination with Fowler et al. suggest a laundry detergent composition comprising a polymer and a chemical entity comprising a deposition aid having a high affinity for cellulose and a benefit agent wherein the benefit agent is linked to the deposition aid via the specified PEG polymer linker, and further, Fowler et al. suggest the use of linkers in general that

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link together structurally distinct catalytic core and cellulose binding domains in a similar enzyme containing laundry detergent. One of ordinary skill in the art would have been motivated to modify the teachings of Fowler et al. with that of Cao et al. to formulate a laundry detergent composition comprising a polymer and a chemical entity comprising a deposition aid having a high affinity for cellulose and linked to a benefit agent, because Cao et al. teach the benefit of using PEG polymers as a linker in detergent compositions to improve bio stain removal and Fowler et al. suggest the use of linkers in general.

9. Claims 1, 4, 6, 9 and 11-13 rejected under 35 U.S.C. 103(a) as being unpatentable over Jones et al. (WO 98/00500) in view of Cao et al. (US 6,025,316).

Jones et al. teach a composition comprising a peptide or protein Deposition Aid having a high affinity for fibers or a surface and attached/adsorbed to the peptide or protein deposition aid a benefit agent. The composition effectively deposits the Benefit Agent onto fabric during the wash cycle. See abstract. Jones et al. also teach the utility of antiredeposition agents such as cellulosic polymers, soil release polymers, fluorescers, and decoupling polymers. See pg.15, ln.20-30.

Jones et al. teach a preferred benefit agent is selected from a fabric softening agent, a perfume, a latex, a resin, an insecticide, a soil release agent, or a soil repelling agent. See pg.5 ln.5-15 & claim 10.

Jones et al. teach that if the benefit is attached to the peptide/protein Deposition Aid, this is via a linking agent. Suitable linking agents are molecules with show a high affinity for the Benefit Agent. It is preferred if the linking agent is covalently attached to the peptide/protein Deposition Aid, it is also advantageous if the linking agent is

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covalently bound to the Benefit agent. Preferred linking agents are selected from various amino acid linking agents. See pg.7, ln.20-35 & pg.8, ln.1-3 & claims 2-4.

Suitable enzymes that may be used with the peptide/protein Deposition Aid include the proteases, amylases, and cellulases for incorporation in detergent compositions. See pg.14, ln.1-10 & claim 9.

Jones et al. teach that if the peptide/protein Deposition Aid is not an enzyme, it can have a chemical structure similar or identical in structure to that of a binding site of an enzyme. See claim 8.

Jones et al. teach that suitable enzymes that may be used with the peptide/protein Deposition Aid include the proteases, amylases, and cellulases for incorporation in detergent compositions. See pg.14, ln.1-10 & claim 9. Also Jones et al. teach a preferred benefit agent is selected from a fabric softening agent, a perfume, a latex, a resin, an insecticide, a soil release agent, or a soil repelling agent. See pg.5 ln.5-15 & claim 10. Jones et al. also teach suitable linking agents are molecules which show a high affinity for the Benefit Agent. It is preferred if the linking agent is covalently attached to the peptide/protein Deposition Aid, it is also advantageous if the linking agent is covalently bound to the Benefit agent. Preferred linking agents are selected from various amino acid linking agents. See pg.7, ln.20-35 & pg.8, ln.1-3 & claims 2-4. Furthermore, in example 2, Jones et al. demonstrate the use of the cellulase deposition system to deliver an anionic fabric conditioner to cotton using a cellulase obtained from *Trichoderma reesei*. Please see example 2, page 19.



Specifically regarding the linking region of claim 1, Jones et al. teach non amino acid linking agents as their preferred linking agents (such as 1-ethyl-3-(3-dimethylaminopropyl)) which shows a high affinity for the benefit agent and is covalently attached to the peptide/protein deposition agent. See page 7.

However, Jones et al. do not specifically teach a linking region that is a polyethylene glycol derivative polymer as recited by the instant claim.

Cao et al. are relied upon as set forth above.

It would have been obvious, to one of ordinary skill in the art, at the time the invention was made, to formulate a laundry care composition comprising a linking region polymer selected from a polyethylene glycol derivative as recited by the instant claim, with a reasonable expectation of success, since the teachings of Jones et al. in combination with Cao et al. suggest a laundry care composition comprising a linking region polymer selected from a polyethylene glycol derivative as recited by the instant claim. One of ordinary skill in the art would have been motivated to combine the teachings of Cao et al. with that of Jones et al. to formulate a laundry detergent composition comprising a polymer and a chemical entity comprising a deposition aid having a high affinity for cellulose and linked to a benefit agent, because Cao et al. teach the benefit of using PEG polymers as a linker in detergent compositions to improve bio stain removal and Jones et al. teach non amino acid linkers in general.

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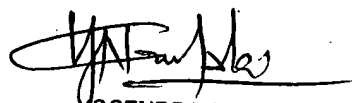
**Conclusion**

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Preeti Kumar whose telephone number is 703-305-0178. The examiner can normally be reached on M-F 9:00am - 5:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Yogendra N. Gupta can be reached on 703-308-4708. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9310.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-872-9309.

Preeti Kumar  
Examiner  
Art Unit 1751

  
YOGENDRA N. GUPTA  
SUPERVISORY PATENT EXAMINER  
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PK